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EXAMINER	
HSU, JONI	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/729,684	Applicant(s) HONG ET AL.	
	Examiner Joni Hsu	Art Unit 2628	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-10,12-23 and 25-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-10,12-23 and 25-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 31, 2007 has been entered.

Response to Arguments

2. Applicant's arguments, see pages 14-24, filed October 31, 2007, with respect to the rejection(s) of claim(s) 1, 4, 5, 7-9, 13-15, 17, 19-21, 23, 25, and 26 under 35 U.S.C. 102(e) and claims 2, 3, 6, 10, 12, 16, 18, and 22 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Orenstein (US006580427B1).

3. As per Claim 1, Applicant argues passage cited in Voorhies (US007023437B1) to teach compressed z-buffer relates to portions of data structure 3900, namely position information, position-related state information, optional bounding box information, color information, texture coordinates, or color-related stage information and not to compressed z-buffer. While Voorhies teaches of hierarchical z-pyramid, this is not equivalent to compressed z-buffer. Voorhies fails to teach each z-buffer having multiple z-records where each z-record embodies z information for plurality of pixels such that condensed depth information for plurality of pixels is represented by single z-record. Storing offsets at relatively low precision is not equivalent to compressed z-

buffer claimed above. Voorhies fails to teach of compressed z-buffer that have z-records where each z-record represents condensed depth information for plurality of pixels (p. 14-15).

In reply, Examiner agrees. But, new grounds of rejection are made in view of Orenstein.

4. Applicant argues Voorhies teaches z-test process loops back to beginning and repeats z-testing process for next finest level. That is, same z-test appears to be performed in an iterative fashion. There is no distinction made between first level z-test and the second level z-test (p. 16).

In reply, Examiner points out Claim 1 defines first level of the z-test as comparing graphic data of current primitive with corresponding information in z-buffer, and defines second level of the z-test as being performed on per-pixel basis in z test manner. Fig. 11 in Voorhies shows flowchart of z-test, and shows z-test (1114) is first performed on one level, and this includes comparing graphic data of current primitive with corresponding information in z-buffer (c. 16, ll. 5-8; c. 6, ll. 28-29), and this is considered to be first level of the z-test. If that level is not finest level (1118), z-testing is then processed for next finest level, and z-test continues to proceed until finest level is reached, and z-testing at finest level is performed on per-pixel basis in z-test manner (c. 16, ll. 1-22; c. 6, ll. 41-45), and this is considered to be second level of the z-test. Applicant argues same z-test appears to be performed in iterative fashion, however, Orenstein teaches first "iteration" of z-test compares graphic data of current primitive with corresponding information in z-buffer, and this is how first level of the z-test is defined in Claim 1. Orenstein teaches second "iteration" of z-test is performed on per-pixel basis in z-test manner, and this is how second level of the z-test is defined in Claim 1. So, Orenstein teaches z-test has two levels, as recited in Claim 1 ("**a** two-level **z-test**...first level of **the** z-test...second level of **the** z-test"). Therefore, Voorhies teaches the two-level z-test as it is recited in the claims.

5. As per Claim 14, Applicant argues Voorhies does not teach z-information for macro-block is compressed into each of plurality of z-records such that condensed depth information for macro-block is represented by a single z-record (page 22).

In reply, the Examiner agrees. However, new grounds of rejection are made in view of

Claim Rejections - 35 USC § 103

6. Text of sections of Title 35, U.S. Code 103(a) not included can be found in prior action.

7. Claims 1, 4, 5, 7-9, 13-15, 17, 19-21, 23, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voorhies (US007023437B1) in view of Orenstein (US00658042B1).

8. As per Claim 1, Voorhies teaches multi-pass method of rendering plurality of graphic primitives (c. 2, ll. 58-67; c. 6, ll. 28-29) comprising in first pass: passing only limited portion of graphic data for each primitive through graphic pipeline, limited portion of graphic data has location-related data (c. 3, ll. 16-31). According to Applicant's disclosure, compressed z-buffer effectively provides condensed depth information for multiple pixels, such that grouping of pixels (or macro-pixel) may by trivially accepted if all pixels of current macro-pixel are deemed to be in front of previously-stored pixels or trivially rejected if all pixels of current macro-pixel primitive are deemed to be behind previously-stored pixels [0023]. Voorhies teaches macro-pixel (16x16 pixel region) may be trivially accepted if all pixels of current macro-pixel are deemed to be in front of previously-stored pixels or trivially rejected if all pixels of current macro-pixel primitive are deemed to be behind previously-stored pixels (c. 54, ll. 44-55; c. 6, ll. 1-14). Z-pyramid data structure is hierarchical z-buffer (c. 33, ll. 36-39; c. 55, ll. 66-67). So, Voorhies teaches processing limited portion of graphic data to build z-buffer, z-buffer having plurality of z-records, each z-record embodying z information for plurality of pixels (c. 54, ll. 44-55; c. 6, ll.

1-14). Record for each fragment includes coverage mask indicating image samples covered by fragment, and this record format is designed to resolve visibility at each image sample (c. 33, ll. 42-49). So bits on coverage mask are set to indicate whether image samples in primitive are visible or not, and this is considered to be setting visibility indicator, for each primitive, if any pixel of primitive is determined to be visible. In a second pass: for each primitive, determining whether associated visibility indicator for that primitive is set; discarding, without passing through graphic pipeline, primitives for which associated visibility indicator is not set; passing remaining portion of graphic data for each primitive determined to have associated visibility indicator set (c. 54, ll. 44-55; c. 46, ll. 61-c. 47, ll. 4; c. 3, ll. 16-35). Multi-level z test is performed, and test continues to proceed to another level until finest level is reached (c. 16, ll. 1-22). Fig. 11 in Voorhies shows flowchart of z-test, and shows z-test (1114) is first performed on one level, and this includes comparing graphic data of current primitive with corresponding information in z-buffer (c. 16, ll. 5-8; c. 6, ll. 28-29), and this is considered to be first level of the z-test. If that level is not finest level (1118), z-testing is then processed for next finest level, and z-test continues to proceed until finest level is reached, and z-testing at finest level is performed on per-pixel basis in z-test manner (c. 16, ll. 1-22; c. 6, ll. 41-45), and this is considered to be second level of the z-test. 2nd level of z-test depends in part on outcome of first level z-test (c. 54, ll. 44-55). So, Voorhies teaches performing two-level z test on graphic data, wherein first level of z-test compares graphic data of current primitive with corresponding information in z-buffer, and second level of z-test is performed on per-pixel basis in z-test manner, wherein second level z-test is performed only on pixels within record of z-information in which first level z-test determines some but not all pixels of associated macropixel are visible (c. 54, ll. 44-55; c.

6, ll. 39-43; c. 16, ll. 1-22; c. 6, ll. 28-29, 41-45). Visible geometry is rendered (c. 5, ll. 50-53), rendering includes shading (c. 6, ll. 15-17). So Voorhies teaches communicating data associated with pixels of macropixels determined to be visible to pixel shader for rendering.

However, Voorhies does not explicitly teach z-buffer is compressed z-buffer, compressed z-buffer comprising plurality of z-records, each z-record embodying z information for plurality of pixels such that condensed depth information for plurality of pixels is represented by single z-record. However, Orenstein teaches z-buffer is compressed z-buffer, compressed z-buffer comprising plurality of z-records (blocks), each z-record embodying z information for plurality of pixels such that condensed depth information for plurality of pixels is represented by single z-record (c. 4, ll. 50-65; c. 9, ll. 43-45).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify device of Voorhies so z-buffer is compressed z-buffer, compressed z-buffer comprising plurality of z-records, each z-record embodying z information for plurality of pixels such that condensed depth information for plurality of pixels is represented by single z-record because Orenstein suggests significant amounts of z-data are transferred between memory and graphics resources during rendering stage which place significant burdens on bandwidth of memory channel, and consequent reduction in memory bandwidth reduces performance of graphics system, and so it is advantageous to use compressed z-buffer containing compressed z-data that may be transferred with significantly lower impact on the bandwidth of memory channel (c. 2, ll. 13-30; c. 4, ll. 11-22, 58-65).

9. As per Claim 4, Voorhies teaches each z-record (c. 54, ll. 44-55) has minimum z value for pixels, maximum z values for pixels (c. 8, ll. 43-55), and coverage mask indicating which of the pixels are visible for current primitive (c. 33, ll. 42-47; c. 6, ll. 28-29).

However, Voorhies does not explicitly teach that the z-record is compressed. However, Orenstein teaches this limitation, as discussed in the rejection for Claim 1.

10. As per Claims 5 and 27, Voorhies teaches each z-record (c. 54, ll. 44-55) has 2 minimum z values for pixels, 2 maximum z values for pixels (c. 8, ll. 43-55), coverage mask indicating which pixels are visible for current primitive (c. 33, ll. 42-47; c. 6, ll. 28-29).

However, Voorhies does not explicitly teach that the z-record is compressed. However, Orenstein teaches this limitation, as discussed in the rejection for Claim 1.

11. As per Claim 7, parser is known in the art to be component of compiler that forms data structure, usually a tree, that is suitable for later processing and captures implied hierarchy of input. Voorhies teaches parser forms tree data structure that is suitable for later processing and captures hierarchy of input (c. 9, ll. 57-61), discarding is performed by parser (c. 54, ll. 44-55).

12. As per Claim 8, Voorhies teaches rendering plurality of graphic primitives comprising passing, within graphic pipeline, only limited portion of graphic data associated with each primitive, limited portion of graphic data has location-related data (c. 2, ll. 58-67; c. 6, ll. 28-29; c. 3, ll. 16-31); each primitive has plurality of pixels (c. 6, ll. 40-44, c. 6, ll. 66-67-c. 7, ll. 3); processing limited portion of graphic data associated with each individual primitive to build z-buffer for each primitive, each z-buffer has z-information for macro-pixel; determining, for each primitive, whether primitive has at least 1 visible pixel; communicating data associated with

pixels of primitives determined to have at least 1 visible primitive to pixel shader for rendering; passing, processing, within pixel shader, remaining graphic data associated with each primitive only for those primitives determined to have at least one visible pixel, remaining graphic data includes at least one of following: lighting, texture, fog data (c. 8, ll. 50-58; c. 54, ll. 44-55; c. 6, ll. 1-17, 39-43; c. 16, ll. 1-22; c. 3, ll. 16-35; c. 5, ll. 50-53; c. 33, ll. 36-39; c. 55, ll. 66-67).

However, Voorhies does not explicitly teach z-buffer is a compressed z-buffer, wherein each compressed z-buffer contains plurality of z-records which each contain compressed z-information for macro-pixel. However, Orenstein teaches compressed z-buffer contains plurality of z-records (block) which each contain compressed z-information for macro-pixel (4x4 array of pixels (span)) (c. 4, ll. 50-65; c. 9, ll. 43-45). Since Voorhies teaches building a z-buffer for each primitive (c. 8, ll. 50-58), the z-buffers of Voorhies can be modified so that they are compressed z-buffers, as suggested by Orenstein. This would be obvious for the reasons given for Claim 1.

13. As per Claim 9, Voorhies teaches setting visibility indicator for each pixel determined to have at least one visible pixel (c. 33, ll. 42-49).

14. As per Claim 13, Voorhies teaches method of rendering plurality of graphic primitives (c. 2, ll. 58-67; c. 6, ll. 28-29) comprising passing in first pass, within graphic pipeline, only limited portion of graphic data for each primitive, each primitive has plurality of pixels and wherein limited portion of graphic data has location-related data (c. 3, ll. 16-31; c. 6, ll. 40-44, c. 6, ll. 66-67-c. 7, ll. 3); processing limited portion of graphic data to build z-buffer, z-buffer having plurality of z-records, each z-record embodying z information for plurality of pixels (c. 54, ll. 44-55; c. 6, ll. 1-14; c. 33, ll. 36-39; c. 55, ll. 66-67); in second pass, within graphic pipeline, performing two-level z-test on graphic data, wherein first level of z-test compares graphic data of

current primitive with corresponding information in z-buffer, and wherein second level of z-test is performed on per-pixel basis in z-test manner, second level z-test is performed only on pixels within record of z-information in which first level z-test determines some but not all pixels of macropixel (16x16 pixel region) are visible, additional graphic data associated with each primitive is passed into graphics pipeline on second pass only for primitives that are at least partially visible (c. 54, ll. 44-55; c. 6, ll. 39-43; c. 16, ll. 1-22; c. 3, ll. 16-35, Fig. 11); and communicating data associated with pixels of macropixels determined to be visible to pixel shader for rendering (c. 5, ll. 50-53; c. 6, ll. 15-17).

However, Voorhies does not explicitly teach z-buffer is compressed z-buffer, compressed z-buffer comprising plurality of z-records, each z-record embodying z information for plurality of pixels such that condensed depth information for plurality of pixels is represented by single z-record. However, Orenstein teaches this, as discussed in the rejection for Claim 1.

15. As per Claim 14, Voorhies teaches graphics processor having 1st-pass logic that delivers to graphic pipeline, in 1st pass, only limited portion of graphic data for each primitive, each primitive has plurality of pixels, limited portion of graphic data has location-related data (c. 3, ll. 16-31; c. 6, ll. 40-44, c. 6, ll. 66-67-c. 7, ll. 3); logic that processes limited portion of graphic data for each primitive to create z-buffer having a plurality of z-records, z-information for macro-block is placed into each of the plurality of z-records (c. 54, ll. 44-55; c. 6, ll. 1-14; c. 33, ll. 36-39; c. 55, ll. 66-67); logic that determines, for each primitive, whether primitive has at least one visible pixel (c. 54, ll. 44-55; c. 6, ll. 1-14); 2nd-pass logic that delivers to graphic pipeline, in 2nd pass, remaining graphic data associated with each primitive for only those primitives determined to have at least one visible pixel, 2nd-pass logic configured to inhibit delivery of

graphic data to graphic pipeline for primitives not determined to have at least one visible pixel (c. 54, ll. 44-55; c. 6, ll. 39-43; c. 16, ll. 1-22; c. 3, ll. 16-35).

But, Voorhies does not explicitly teach z-buffer is compressed z-buffer comprising plurality of z-records, z-information for macro-block is compressed into each of plurality of z-records such that condensed depth information for macro-block is represented by single z-record. But, Orenstein teaches z-buffer is compressed z-buffer comprising plurality of z-records (blocks), z-information for macro-block (4x4 array of pixels (span)) is compressed into each of plurality of z-records such that condensed depth information for macro-block is represented by single z-record (c. 4, ll. 50-65; c. 9, ll. 43-45). This would be obvious for reasons for Claim 1.

16. As per Claim 15, a parser is known in the art to be a component of a compiler that forms a data structure, usually a tree, which is suitable for later processing and which captures the implied hierarchy of the input. Voorhies discloses a parser that forms a tree data structure which is suitable for later processing and which captures the hierarchy of the input (c. 9, ll. 57-61), and the first-pass logic and a second-pass logic are contained within a parser (c. 54, ll. 44-55).

17. As per Claim 17, Voorhies discloses including logic for setting a visibility indicator for each primitive determined to have at least one visible pixel (c. 33, ll. 42-49).

18. As per Claim 19, Voorhies teaches including logic configured to associate each primitive processed in the first pass of the data with a distinct visibility indicator (c. 33, ll. 42-49).

19. As per Claim 20, Voorhies discloses including logic configured to evaluate, for each primitive presented for processing in the second pass, a status of the visibility indicator associated with the given primitive (c. 54, ll. 44-55; c. 46, ll. 61-c. 47, ll. 4).

20. As per Claim 21, Voorhies teaches graphics processor having logic that passes and processes only portion of graphic data passed into graphic pipeline for each of plurality of primitives, in 1st pass within graphic pipeline to determine whether primitive has at least one visible pixel, wherein each primitive comprises plurality of pixels, and graphic data has location-related data (c. 3, ll. 16-31; c. 6, ll. 1-14, 40-44, c. 6, ll. 66-67-c. 7, ll. 3; c. 54, ll. 44-55); logic building z-buffer from processing of the graphic data in the first pass, z-buffer comprising a plurality of z-records, z-information for a macro-block is placed into a single record (c. 54, ll. 44-55; c. 6, ll. 1-14; c. 33, ll. 36-39; c. 55, ll. 66-67); and logic that renders, in 2nd pass within graphic pipeline, only primitives determined in 1st pass to have at least one visible pixel, remaining portion of graphic data associated with each primitive is passed into graphics pipeline on 2nd pass (c. 54, ll. 44-55; c. 6, ll. 39-43; c. 16, ll. 1-22; c. 3, ll. 16-35).

However, Voorhies does not explicitly teach z-buffer is compressed z-buffer comprising plurality of z-records, wherein z-information for macro-block is compressed into single record such that condensed depth information for macro-block is represented by single record. However, Orenstein teaches this limitation, as discussed in the rejection for Claim 14.

21. As per Claim 23, a parser is known in the art to be a component of a compiler that forms a data structure, usually a tree, which is suitable for later processing and which captures the implied hierarchy of the input. Voorhies discloses a parser that forms a tree data structure which is suitable for later processing and which captures the hierarchy of the input (c. 9, ll. 57-61), and the logic configured to limit the processing of graphic data is within a parser (c. 54, ll. 44-55).

22. As per Claim 25, Voorhies discloses including logic for setting a visibility indicator for each primitive processed in the first pass (c. 33, ll. 42-49).

23. As per Claim 26, Voorhies teaches logic evaluating visibility indicator for each primitive prior to submitting primitive to logic rendering in 2nd pass (c. 54, ll. 44-55; c. 46, ll. 61-c. 47, ll. 4).

24. Claims 3, 6, 10, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voorhies (US007023437B1) and Orenstein (US006580427B1) in view of Gannett (US006118452A).

25. As per Claim 3, Voorhies and Orenstein are relied upon for teachings discussed for to Claim 1. Voorhies teaches location-related data comprises X, Y, and Z values (c. 14, ll. 22-38).

However, Voorhies and Orenstein do not teach location-related data has W values. But, Gannett teaches location-related data has X, Y, Z and W values (c. 1, ll. 29-33; c. 13, ll. 50-55).

It would have been obvious to one of ordinary skill in the art at time of invention by applicant to modify Voorhies and Orenstein so location-related data has W values because Gannett teaches W is needed in order to determine horizontal length of pixels to render, and W is commonly used in typical computer graphics systems (c. 1, ll. 18-33; c. 13, ll. 50-55).

26. As per Claims 6, 10, and 18, Voorhies does not teach setting visibility indicator is setting bit in frame buffer memory. However, Gannett teaches setting visibility indicator comprises setting bit in frame buffer memory (c. 13, ll. 16-19; c. 14, ll. 13-22).

It would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modify device of Voorhies so setting visibility indicator more specifically comprises setting bit in frame buffer memory as suggested by Gannett because Gannett suggests setting bits in mask is a quick and efficient way to indicate visibility (c. 13, ll. 16-19; c. 14, ll. 13-22).

27. Claims 12, 16, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Voorhies (US007023437B1) and Orenstein (US006580427B1) in view of Griffin (US005990904A).

Voorhies and Orenstein are relied upon for the teachings as discussed relative to Claim 8. Voorhies teaches determining whether primitive has at least one visible pixel ensures primitive does not fail z-buffer test (c. 54, ll. 44-55; c. 6, ll. 1-14), ensures all pixels of primitive are not culled (c. 3, ll. 49-55), and ensures all pixels of primitive are not clipped (c. 12, ll. 37-42). Orenstein is used to teach z-buffer is compressed z-buffer, as discussed in rejection for Claim 1.

But, Voorhies, Orenstein do not teach ensuring primitive does not render to zero pixels. According to Applicant's disclosure, zero-pixel primitive is primitive that, when rendered, consumes less area than one pixel of visibility [0024]. Griffin teaches compressed z-buffer (c. 9, ll. 34-54), ensuring primitive does not render to zero pixels (c. 2, ll. 61-c. 3, ll. 5; c. 5, ll. 26-42).

It would have been obvious to one of ordinary skill in the art at time of invention by applicant to modify Voorhies and Orenstein to include ensuring primitive does not render to zero pixels because Griffin teaches being able to perform anti-aliasing so anomalies such as jaggy edges in rendered image do not result (c. 2, ll. 61-c. 3, ll. 5). It would be obvious to include compressed z-buffer because Griffin teaches considerably reducing amount of data required, allowing implementation of more sophisticated anti-aliasing algorithm (c. 9, ll. 34-54).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joni Hsu whose telephone number is 571-272-7785. The examiner can normally be reached on M-F 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kee Tung can be reached on 571-272-7794. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JH

KEE M. TUNG
SUPERVISORY PATENT EXAMINER